opposite (right) side show infiltration with rapidly growing columns of carcinoma cells but the tube is free from growth. A papillomatous growth on the surface is malignant—no corpora lutea are seen.

I have to thank Dr. R. Sanderson, senior surgeon to the hospital, for kindly permitting me to make use of the case.

Brighton.

# ON THE CONTINUOUS ADMINISTRATION OF FLUIDS BY THE RECTUM IN THE TREATMENT OF ACUTE GENERAL PERITONITIS.

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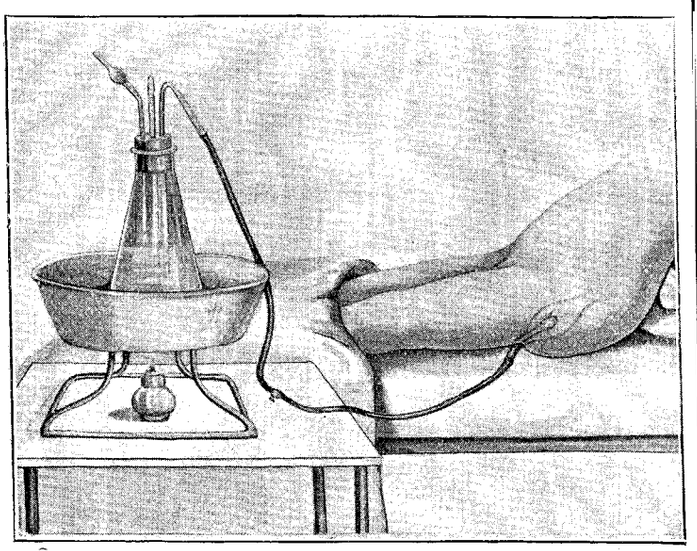
IN the *Annals of Surgery*, 1906, Vol. XLIII., p. 231, Dr. Le Conte of Philadelphia, in discussing the treatment of diffuse septic peritonitis, drew attention to the method of introducing large quantities of fluid into the rectum which he had witnessed in the clinic of Dr. J. B. Murphy at Chicago. The results which Dr. Murphy and Dr. Le Conte had attained in the treatment of acute peritonitis due to appendicitis were so remarkable that I hastened to put the principles enunciated in that paper into practice. Certainly the most novel and in my judgment the most important of the several points mentioned therein had reference to the continuous administration of fluid by the rectum after operation. I have come to the conclusion, after a fairly large experience of it, that there are few recent therapeutic measures which are in value equal to this. I have up to the present time treated 19 consecutive cases of acute general peritonitis due to appendicitis with two deaths, and the recovery of several of these patients is, I believe, largely, if not solely, due to the continuous administration by the rectum of saline solution over a period of two to four days after the operation. But it is not only in such cases that I have found this method of value. In two recent cases of partial gastrectomy and in one case of complete gastrectomy the recovery of the patients was undoubtedly helped by this abundant supply of liquid to them. I propose to describe briefly the method of administration which I have found the most useful and shortly to add the details of a few cases in which I have adopted it.

The first point is concerned with the selection of a proper rectal tube. To find a perfectly satisfactory one is no easy matter. The patient during the administration of the infusion is generally propped up in bed, and if a short solid tube is used the rubber tube attached to it is apt to kink. I have used in all my recent cases a tube one foot in length



Apparatus for the continuous administration of fluids by the rectum.

and half an inch in diameter, made of pewter, with a slightly bulbous extremity which is introduced into the rectum. The tubes are supplied to me by Messrs. Allen and Hanburys. At the end and on all sides of this bulb holes are pierced so that fluid can easily pass through them and flatus can escape and can be seen bubbling through the supply-tank or funnel. If a single aperture only is present in the tube it is apt to be blocked by fæces. When there are many openings the rectum is equally distended above the sphincter and the obstruction of the flow of fluid by fæces does not occur. The tube is introduced about from two to three inches into the rectum, and at the anus it is bent sharply so as to lie easily on the bed. To its outer end a long rubber tube is attached, which leads to the source of supply at the bedside. The most convenient vessel to hold the saline solution is an "infusion flask" (Sahli's pattern). This is of the type of a Florence flask, but instead of being globular it is triangular in shape, having a large base. The flask holds from three to four pints and is closed at its neck by a rubber stopper, through which there are three openings; the one admits a glass-tube, which at one end reaches to the bottom of the flask and at the other is attached to the rubber-tube leading to the rectum; a second admits a thermometer; and a third a tube which acts as an inlet for air. The whole glass flask is immersed in a bath of hot water, beneath which a spirit lamp burns. This secures an equable temperature of the saline solution. The best temperature is from 100° to 102° F. If the fluid is hotter than this it is not retained well; its temperature is probably three or four degrees lower than that shown by the thermometer when the rectum is reached. When the tube has been introduced into the rectum and the flask attached the latter should be elevated so that its base is about from three to six inches higher than the rectum. The saline begins to flow and continues to flow at the rate of about a pint an hour. It is not desirable to introduce more than one and a half pints, or at the most two pints, during the first hour; subsequently a rate of one pint in the hour should be maintained. The rapidity of the flow is altering by raising or lowering the flask. It should be regulated by the patient's comfort. If a feeling of tightness or distress is caused the flow is too rapid. As a rule no uneasiness is caused till about five pints have been introduced. It may then be necessary to retard the flow for half an hour or an hour, or even to stop it for a few minutes. In only one case has less than five pints caused distress. If the rate of flow be regulated properly and the temperature of the fluid not altered from seven to ten pints can be introduced without any interruption. If flatus reaches the rectum it can escape by the tube. If, as rarely happens, the fluid introduced acts as an enema the tube may be replaced as soon as the bowels have acted. Care and almost constant attention on the part of the nurse are necessary to make the administration a success; a marked difference in the capacity of nurses will probably be discovered by all who try the method. In place of the infusion flask a funnel may be used which the nurse must keep filling from a jug. This is tedious and a variation in the temperature of the fluid is inevitable.

The largest quantity of fluid taken by any patient of mine during the first 24 hours was 16 pints; the largest quantity administered was 29 pints, extending over three days. These quantities were borne quite easily, without any distress whatever. The change in the appearance of a patient who is absorbing fluid so rapidly is very remarkable. If the case is one of acute general peritonitis the patient who looks livid, whose eyes are sunken, whose skin is moist and cold, whose mouth is so parched that his tongue can hardly move, begins in a few hours to look ruddy and "clean," his mouth is moist, his eyes are bright, and all his aspect is one of comfort and contentment. The pulse gains volume and improves steadily in character, urine is passed in large quantities, and the skin keeps moist. Not a few patients say that they feel very hot and some of them perspire freely. It is a question, perhaps, as to how far one is justified in carrying this treatment in patients whose kidneys are defective. In the case of partial gastrectomy to be mentioned presently I gave 16 pints of saline solution in 24 hours; this represents a large dose of sodium chloride. At the end of the 24 hours it was noticed that the patient's face looked fuller and rosier than it had ever done and a slight œdema of the lower eyelids developed. The injection was therefore discontinued for 12 hours to be again administered without any ill effect.

The chief use and the most remarkable achievements of this method are certainly in the treatment of acute general peritonitis, but I have found great help from it in the preparation and after-treatment of certain cases of gastric disease. Patients who suffer from pyloric obstruction in a marked degree are often wasted and shrivelled and parched. Such patients stand operation badly if the obstruction is

malignant. It has been my custom for two or three years in all such cases to perform gastro-enterostomy as speedily as possible. As soon as the lines of suture are complete I ask the anæsthetist to pass a long stomach tube; when this reaches the stomach I direct it through the new opening into the distal limb of the jejunum and then while I am stitching up the abdominal wall 50 ounces of peptonised milk, with one ounce of brandy, are given. The effect is most satisfactory. In one recent case of partial gastrectomy the patient was so ill and emaciated that I was doubtful if she could bear the removal of the pyloric growth. I therefore performed gastro-enterostomy, using the cardiac half of the stomach for the anastomosis. When this was complete the stomach tube was passed through into the jejunum and while I was engaged in removing the stomach a substantial meal of 50 ounces of peptonised milk was allowed to trickle into the jejunum. When this patient returned to bed the continuous rectal administration of saline fluid was begun and 16 pints were given. The first two pints contained glucose also. Eight weeks ago in another case I removed the whole stomach, attaching the jejunum to the œsophagus. Contrary to my usual practice I gave the patient no fluid at all by the mouth for 24 hours. During that time he received nine pints of fluid by the rectum and was perfectly comfortable and free from thirst. During the second period of 24 hours he absorbed six pints introduced into the rectum. His recovery was undoubtedly made more certain and less distressing by his free absorption of the fluid given by the rectum.

Dr. Murphy is of the opinion that in cases of acute peritonitis the fluid causes a reverse current of the lymph in the peritoneal lymphatics, "so that instead of absorption taking place from the peritoneal surface the mouth of the lymphatics pour out fluid, bathing the peritoneum with this free discharge," which escapes then by the tubes; that in fact the peritoneal cavity is flushed out by the fluid. I am doubtful if this view is correct. If an innocuous colouring matter be introduced with the saline solution, the fluid discharge from the abdominal wounds is never stained therewith.

We are, I think, entitled to say of this method that the continuous administration of fluids by the rectum is safe, that it is easily borne by the patients, that it effects a very remarkable change in their appearances and in their prospects of recovery after serious abdominal operations, and that the quantities which can be retained by the patient without discomfort do not throw a strain upon the kidneys which they find difficult to bear.

Leeds.

## A NOTE ON HYPOPHARYNGOSCOPY.

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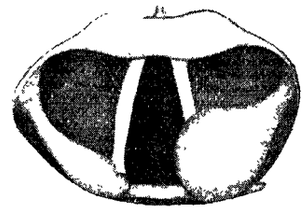
IN THE LANCET of May 25th, 1907, p. 1421, Dr. P. Tetens Hald of Copenhagen described under the above title a new method, devised by von Eicken[1] in Professor Killian's clinic, for the examination of the hypopharynx, or that part of the pharynx which lies below the aperture of the larynx. This region is especially difficult of examination, for the posterior surfaces of the arytenoids and cricoid plate lie in contact with the posterior pharyngeal wall and are not exposed to view in the laryngeal mirror. It is by no means easy to maintain Killian's tubes in position at this spot; they cause great discomfort unless a general anæsthetic be given, which would have been inadvisable in view of the exhausted condition of the patient whose case is related below, and their use is not without risk in cases of ulceration of this region. As this part of the pharynx is often the seat of important lesions and, especially in women, is frequently the site of an epithelioma, any promising method for its examination becomes of great importance. The following case in which von Eicken's method was successfully employed will, therefore, be of interest.

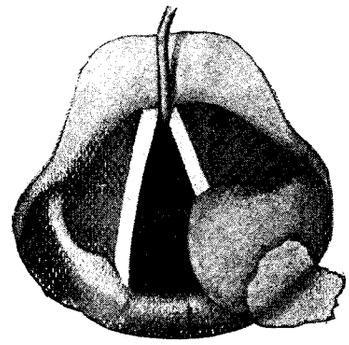
A woman, aged 39 years, was sent to me at Mount Vernon Hospital on June 6th, 1907, by Dr. F. T. Hebb. She complained of pain on swallowing, which began eight months before and grew steadily worse, so that she had eaten no solid food for three weeks and had hardly swallowed anything, even fluids, for the last four days. She appeared very weak and emaciated, the voice was slightly hoarse, and a gland was just palpable on the left side of the thyroid cartilage. On laryngoscopic examination the left arytenoid was seen to be fixed, greatly swollen, and œdematous, the cords were normal, and no ulceration was visible, but a minute red line could be detected on the pharyngeal wall behind the swollen arytenoid, which suggested the upper end of an ulcer in the hypopharynx (see Fig. 1). Nothing more

FIG. 1.



definite could be seen and, for the reasons mentioned above, the use of Killian's tubes appeared inadvisable. I therefore decided to try von Eicken's method and after thorough cocainisation I passed a stout laryngeal probe, covered with moistened cotton-wool, below the cords and made forward traction on the cricoid. A large ulcer could now be seen to cover the back of the arytenoid and cricoid plate and to extend on to the pharynx; it had a greyish-white base and a red raised margin. Fig. 2 shows how the parts

FIG. 2.



were exposed by pulling forwards the larynx. Although the patient was nervous the manipulation caused her no inconvenience. The most urgent indication being to relieve the dysphagia I clipped out a small piece from the swollen arytenoid and admitted her to St. George's Hospital on the following day; the arytenoid swelling diminished much in size and the dysphagia was greatly relieved, so that she could eat the ordinary fish diet after 48 hours. Although the probable diagnosis was epithelioma and no history suggestive of syphilis could be obtained she was given mercury and potassium iodide for a fortnight, at the end of which time the ulceration had slightly extended and the gland in the neck was larger, though the arytenoid remained small and the wound made on it had healed. A small piece was now removed from the edge of the ulcer and under the microscope showed definite epithelioma.

In this case the extensive involvement of the pharynx contra-indicates operation; von Eicken's method has been of great use in showing at once the extent of the pharyngeal involvement and therefore in proving the case to be inoperable. It is also interesting to note how greatly the dysphagia was improved by relieving the tension of the œdematous arytenoid, for the patient was still taking solid food when she left the hospital four weeks after the little operation.

Wimpole-street, W.

[1] Archiv für Laryngologie und Rhinologie, Band xix., Heft 2, 1907, p. 213.

CARDIFF INFIRMARY.—£333 have been received by the treasurer of the Cardiff Infirmary from persons who let the windows of their houses on the occasion of the recent visit of the King to the town.